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Using sociolinguistic data to illuminate a  
theoretical debate: The case of person/number  
marking in Polish

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# Using Sociolinguistic Data to Illuminate a Theoretical Debate: The Case of Person/Number Marking in Polish

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## 1 Introduction

This paper is devoted to the grammatical and sociolinguistic status of pieces of Polish verbal morphology indicating person and number information of the subject. The pieces are known in the literature as verbal clitics (Franks 1998), auxiliary clitics (Szczegielniak 2005, Borsley and Rivero 1994), and mobile inflections (Embick 1995). In an effort to strip the terminology of any unwanted theoretical bias, they will be referred to as Person/Number (P/N) markers hereafter.

P/N markers have received considerable attention in the morphosyntactic literature from a number of perspectives (see References for a selection), chiefly because their grammatical status seems to defy a uniform analysis. These theoretical analyses often crucially rely on certain sociolinguistic assumptions, which however have never been properly verified with data gathered in a speech community. One immediate purpose of this paper is to fill this gap and supply linguists working on Polish verbal morphosyntax with some necessary sociolinguistic evidence. More generally, this paper is meant as a contribution to the enterprise of bringing information on sociolinguistic processes to bear on theoretical issues, and using this information to make progress in formal linguistic theory. At the same time, the case in question shows how sociolinguistic investigations can benefit from understanding the theoretical issues involved. In fact, given the nature of morphosyntactic objects under scrutiny, which tie in directly with properties of syntactic heads and agreement processes, such understanding is indispensable when dealing with morphosyntactic variables.

The paper is organized as follows: in section 2, I outline the key distributional properties of Polish P/N markers, focusing on their mobility and interaction with several phonological processes. Section 3 presents several approaches put forward in the literature. In section 4, I present the preliminary sociolinguistic account of the variable in question, discussing specifically its contribution to various theoretical accounts presented earlier.

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\*I would like to thank David Embick for many helpful suggestions and Michael Friesner for help in making this piece of prose look like English.

## 2 Distribution Facts

### 2.1 Position and Mobility<sup>1</sup>

Polish expresses Person, Number and Gender subject-verb agreement canonically with suffixes on the verb, as shown in (1) below:

- (1) Czyta-ł-e-ś            książkę.  
 read.pst-masc-2sg    book.acc  
 ‘You read the book.’

However, P/N marking can also appear on constituents other than verbs: wh-words (2b), object pronouns (2c), subject pronouns (3b), adjective phrases (3c), adverbs (4b), or complementizers (5b).

- (2) a. Kiedy    to            kupili-ście?  
       when    this.acc bought.masc-2pl  
       ‘When did you buy this?’  
 b. Kiedy-ście to kupili-Ø?  
 c. Kiedy to-ście kupili-Ø?  
 (3) a. (My)<sup>2</sup>    byli-śmy            zmęczeni.  
       we        be.pst.masc-2pl    tired  
       ‘We were tired.’  
 b. My-śmy byli-Ø zmęczeni.  
 c. Zmęczeni-śmy byli-Ø.  
 (4) a. Daleko    pobiegli-ście        wczoraj.  
       far        run.pst.masc-3pl    yesterday  
       ‘You ran far yesterday.’  
 b. Daleko-ście pobiegli wczoraj.  
 (5) a. Oni        powiedzieli,        że    kupiła-ś            zegarek.  
       they        say.pst.masc-3pl, that buy.pst.masc-2sg    watch  
       ‘They said that you bought a watch.’  
 b. Oni powiedzieli, że-ś kupił-Ø zegarek.

In examples (2)–(5) above, P/N markers can either appear on a verb, or move to a pre-verbal constituent. That only pre-verbal attachment is allowed is evident from the ungrammaticality of the following sentences:

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<sup>1</sup>The term ‘mobility’ is not meant to suggest that attachment to various hosts is achieved by syntactic movement. As we shall see, whether P/N markers appear on non-canonical hosts via movement or some other process is subject to debate.

<sup>2</sup>Parentheses indicate preference for pro-drop.

- (6) \*My byli-Ø zmęczeni-śmy.  
 (7) \*Daleko pobiegli-Ø wczoraj-ście.

Furthermore, P/N markers can break up constituents, although that is limited only to constituents that can be broken up independently by material other than P/N marking. This is shown in (8b), where a P/N marker attaches to the possessive NP and breaks up a DP, but the same DP can be broken up by an overt subject, as in (8c):

- (8) a. (Ty) Ewy książkę kupiłeś.  
       you Ewa's book.acc buy.pst.masc-2sg  
       'You bought Ewa's book.'  
 b. (Ty) Ewy-ś książkę kupiłeś-Ø.  
 c. Ewy ty książkę kupiłeś-ś.

In addition to the restriction on post-verbal attachment, P/N markers cannot undergo clitic climbing out of a clause that they were generated in (see (9) below), and they cannot attach to negation (just as other material cannot break the Neg-V complex), as seen in (10):

- (9) a. Oni zawsze sądzili [<sub>CP</sub> że wy byliście z Warszawy].  
       they always thought that you be.pst.masc-3pl from Warsaw  
       'They always thought you were from Warsaw.'  
 b. \*Oni zawsze-ście sądzili że wy byli-Ø z Warszawy.  
 (10) a. My nie byli-śmy z Warszawy.  
       we not be.pst.masc-1pl from Warsaw  
       'We were not from Warsaw.'  
 b. \*My nie-śmy byli-Ø z Warszawy.

Finally, there is some evidence that P/N markers can be omitted in certain instances of coordination. According to the grammaticality judgments given in the literature (e.g. Franks 1998), coordination structures are more acceptable in plural than in singular forms:

- (11) a. Czytali-śmy, pisali-śmy i studiowali-śmy.  
       read.pst.masc-1pl write.pst.masc-1pl and study.pst.masc-1pl  
       'We read, wrote, and studied.'  
 b. Czytali-śmy, pisali-Ø i studiowali-Ø.  
 (12) a. Czytał-em, pisał-em i studiował-em.  
       read.pst.masc-1sg write.pst.masc-1sg and study.pst.masc-1sg  
       'I read, wrote, and studied.'  
 b. ?Czytał-em, pisał-Ø i studiował-Ø.

Put together, these mobility properties were taken by authors working in the lexicalist tradition—and thus maintaining a strict distinction between syntax and morphology—to be evidence for P/N markers being clitics, or pieces of syntax. First, such low degree of host selection is one of the classic properties of clitics (Zwicky and Pullum 1983). Second, coordination data are also taken to indicate P/N markers' syntactic provenience. In particular, if agreement pieces were parts of words rather than syntactic objects, their deletion in coordinated structures would violate the principle of lexical integrity (Di Sciullo and Williams 1987).

## 2.2 Interaction with Phonological Rules

As is well known, Polish has regular word stress on the penultimate syllable; (13a) is thus grammatical, but (13b) is not. In constructions involving first and second person plural forms of the past tense verbs, however, antepenultimate stress is also allowed when P/N marking is on the verb, as in (14a)–(14b)<sup>3</sup>:

- (13) a. Wi.dzia.łem go w kinie.  
 see.pst.masc-1sg him in cinema.acc  
 'I saw him in the cinema.'  
 b. \*Wi.dzia.łem go w kinie.
- (14) a. Wy to ku.pi.li-ś.cie.  
 you it buy.past.masc-2pl  
 'You bought it.'  
 b. Wy to ku.pi.li-ś.cie.  
 c. \*Wy-ście to ku.pi.li-∅.

When P/N marking attaches to a pre-verbal host, it falls outside the domain of stress and antepenultimate stress results, as shown in (4b), repeated here as (15) with two different stress assignments:

- (15) a. Da.le.ko-ś.cie pobiegli wczoraj.  
 b. \*Da.le.ko-ś.cie pobiegli wczoraj.

The presence or absence of a P/N marker on a verb also affects stress assignment. Antepenultimate stress, in particular, is only possible with a P/N marker attached, either to a verbal host like in (14b), or to a pre-verbal constituent in (15a). Under most phonological theories of stress, however, stress assignment rules apply at the word level. In the lexical phonology

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<sup>3</sup>Third person marking is null.

analysis of Polish stress (e.g. Booij and Rubach 1987), rules apply after Yer Deletion, a postcyclic rule, and must thus be postcyclic lexical rules.

Another phonological rule that is affected by verb agreement of the type under analysis here is Raising, which raises /o/ to [u] before voiced obstruents in word-final syllables:

(16) m[o]głem → m[u]gł I could → he could

Since Raising also applies after Yer Deletion in a feeding order, it must be a postcyclic rule, too. However, the presense of P/N marking prevents the rule from applying by eliminating its application environment. When P/N marking is not attached to a domain where Raising applies, the rule applies:

(17) a. Ja mu pom[o]głe-m.  
       I him help.past.masc-1sg  
       'I helped him.'  
       b. Ja-m mu pom[u]gł-Ø.

## 2.3 Summary

The phonological evidence presented in this section goes against the findings summarized earlier. While P/N markers' mobility, and the possibility of their omission in coordinated structures suggest that a syntactic process is at play, their behavior with respect to word-level phonological rules indicates morphological (lexical) status. We are thus faced with a conundrum: how can something with the distribution of a syntactic clitic affect lexical rules? Any analysis must be able to explain P/N markers' dual nature, and there are three logical solutions. One is to view P/N marking as a piece of morphology and somehow to account for the syntactic distribution evidence; another is to view it as a predominantly syntactic phenomenon and try to explain its phonological behavior; the last possibility is to say that Polish P/N markers are in fact *both* clitics and pieces of morphology. All three types of analyses can be found in the literature.

## 3 Existing Analyses

### 3.1 Lexical Cliticization

We have seen before that Rubach and Booij use phonological rules such as stress assignment and Raising to assess the grammatical status of P/N markers. Specifically, the phonological behavior of the markers leads them to conclude that they are derived in the lexicon, which is to say they are not

clitics. Further analysis shows that when P/N markers appear on non-verbal hosts, this can not be due to a movement operation. This is illustrated with a simple example discussed by the authors (p. 35, their 67):

(18) jak ro.bi.le-m      jak-em ro.bił-Ø

If a movement operation is responsible for the P/N marker attaching onto a pre-verbal host, we would need a rule that retracts stress already assigned to the verb marker, reassigning it to the first syllable of *ro.bił*. Such a rule would have to be postlexical to be able to apply after movement, but that creates problems for rules such as Raising, which as lexical rules cannot apply afterwards. Therefore, according to this analysis P/N markers are attached in the lexicon by a word formation rule to *all* hosts in the syntax, and then pruned by a syntactic filter to guarantee that no multiple markers surface when derivation is complete.

Rubach and Booij's analysis is an elegant explanation of the phonological aspects of P/N markers' behavior, but it fails to account for key distributional facts presented in section 2.1. First, it offers no natural explanation why P/N markers can only appear pre-verbally when not in their canonical position—under their analysis this is merely accidental, as is the fact that of the pre-verbal hosts negation is not a possible site for P/N marking attachment. Further, the analysis is not parsimonious, as it postulates massive overgeneration of P/N markers in the lexicon. Third, we have seen in 2.2 that in certain contexts antepenultimate stress is allowed, as if P/N markers in these constructions were invisible to stress assignment rules (which scan the domain and assign main word stress to a penultimate syllable). This would suggest that they are added *after* stress is assigned in the lexicon, which amounts to admitting their syntactic origin. Rubach and Booij handle the issue by noting that antepenultimate stress is a cultivated pattern, used only in specific formal contexts. Other antepenultimate forms are only an externally conditioned affectation, and thus not a challenge to the analysis. A final problem in Rubach and Booij's analysis concerns a difference between P/N marking and an irrealis particle *by*, e.g., *byliby-ście* (you-pl. would be, as opposed to *byli-ście*, you-pl. were). Since *by* does not affect Raising and stress placement the way P/N markers do, it is given a syntactic treatment by the authors. The example just given, however, shows that P/N marking always follows the particle, not the other way around. Rubach and Booij's analysis does not predict why that should be the case.

### 3.2 Clitics at PF

An analysis of P/N markers as syntactic auxiliary clitics was proposed by

Borsley and Rivero (1994). According to this account, P/N markers are syntactic heads generated in AgrS (or  $I^0$ ) position, that is, above a VP in the standard view of phrase structure. The surface form verb+P/N marker is obtained via the verb's V-to-Agr head movement (Figure 1), whereas in cases when the verb does not move up, the phonologically weak marker simply cliticizes to whatever precedes it at PF, thus in effect appearing as if attached to some other, pre-verbal host (Figure 2). Both derivations are illustrated below for the example sentence given in (19).

- (19) a. Ty widział-eś ten plik.  
 You see.pst.masc-2sg this file.acc  
 'You saw this file.'  
 b. Ty-ś widział-Ø ten plik.

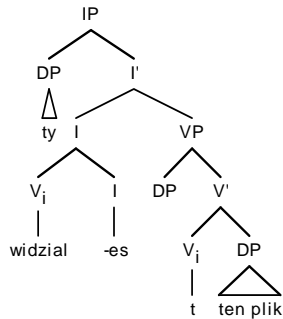


Figure 1. Verb+P/N

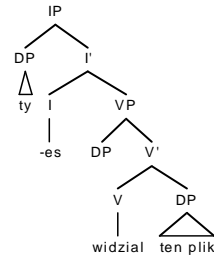


Figure 2. P/N appearing pre-verbally

Borsley and Rivero's analysis of P/N markers as auxiliary heads is supported by historical developments of the language: in old Polish P/N markers were full auxiliary verbs which then have been gradually reduced phonologically (Andersen 1987). However, despite being syntactic, P/N markers do not adhere to any structural requirements; they do not, for instance, need to appear in the Wackernagel position.

While elegantly accounting for a number of distributional facts observed before, this analysis does not attempt to capture the phenomena handled by Rubach and Booj. This has led some linguists who accept the thrust of Borsley and Rivero's analysis to posit a dual account of P/N marking.

### 3.3 Dual Analysis

Under the dual analysis (Franks 1998, Franks and Bański 1999), Polish P/N

markers are clitics when they behave like clitics, verbal inflections when they behave like suffixes, and sometimes ambiguous between the two. This proposal, then, requires that a grammar employ both possible interpretations of P/N marking. Franks and Bański find an independent justification for such an analysis in Kroch's work on syntactic change (Kroch 1989, 1994). Specifically, they suggest that the notion of competing grammars provides a solution to the problem of the "schizophrenic" behavior of Polish P/N markers. We know that syntactic change involves competition between mutually exclusive variants, which are nevertheless both available to a single speaker, with changing frequency. If that process is well attested, then why not posit that speakers of Polish have two general mechanisms of morphosyntactic analysis for this phenomenon? This approach is further supported by our knowledge of the historical developments of the P/N marking, alluded to before. If the general direction of the process is from a syntactic (auxiliary) to a morphological (suffix) piece, and if the process is not yet completed (as the facts presented in section 2 clearly show), then it may not be surprising that we find two competing analyses. For all singular forms, which do not exhibit any difference in stress, we might say that the change has been completed, while elements of syntactic behavior are still present in the 1–2 person plural system. Having said that, there are at least two important *caveats* one should keep in mind with respect to the competing grammars interpretation of this process. First, syntactic change in languages with relatively free word order like Polish is not yet well understood (but see Taylor 1994). Consequently, and this is the second point, it is difficult to imagine how a language learner would detect this particular case of grammar competition. Franks and Bański are silent on both issues.

### 3.4 Mobile Inflections

As we have seen, adopting a lexical approach to morphosyntax makes wrong empirical predictions, cannot account for all distributional facts, and forces one to admit a relatively speculative dual analysis. However, abandoning the precepts of this tradition allows for a uniform analysis that combines the advantages of the previous approaches. This is the analysis of Embick (1995), where P/N markers are mobile auxiliary inflections.

Using the term "inflection" might be potentially misleading, for it suggests a piece of morphology, whereas Embick does not posit a distinction between morphology and syntax. In his analysis, and in later work where the central tenets of Distributed Morphology are explicitly articulated (e.g. Embick and Noyer 2001), primitive objects called Vocabulary Items are assembled in syntactic structures at LF and then are subject to

rearrangements at PF. In other words, the theory treats P/N markers simply as VIs. So what are they?

Embick begins by noting that the *by* irrealis used to have its own set of P/N marking in Polish, but later in the history of the language it adopted a new indicative set of markers. These are precisely P/N markers. These same markers can be seen on the present tense auxiliary stem *jest*. The ingenuity of the analysis lies in postulating that when on neither *by* nor *jest*, P/N markers are still inflections on a phonologically null auxiliary stem. Embick's assumed phrase structure is shown below in Figure 3:

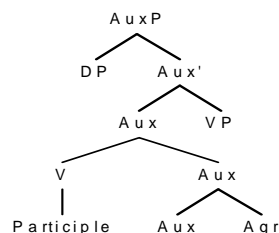


Figure 3. Phrase structure of AuxP in Embick (1995)

When we see a P/N marker on a verb, the underlying syntactic structure is really [Part [Aux Agr]], with a phonologically null auxiliary. Importantly, however, this structure is later treated by the phonology as if the P/N marker had been added *directly* to a participle which incorporated into the auxiliary.

Embick's analysis handles the 'mobility' effects on par with Borsley and Rivero's account, and it captures the link between P/N markers and *by*. It also accommodates phonological evidence from the Raising rule. Like Rubach and Booi's work, Embick treats antepenultimate stress as a mere register effect—the analysis only predicts penultimate forms. Finally, it is unclear how such an approach would explain the coordination data, if such data are to be used as a theoretical diagnostic at all. Given the lack of complete understanding of how affixation/cliticization interacts with coordination (cf. derivation of *John was more tall and older than Mary*), that may very well be an open question.

### 3.5 Summary

There are several competing analyses of P/N marking in Polish. Of the lexical analyses, the dual approach is the one that handles the data best, but it comes at the considerable cost of postulating two different grammars. Embick's analysis is superior on grounds of conceptual simplicity and empirically, since it provides a natural explanation for most of P/N

marking's distributional behavior. For these reasons, it is the analysis that should be favored, provided that its predictions regarding stress facts and coordination structures are borne out when confronted with the fieldwork data, which is the subject of section 4 below.

## 4 A Sociolinguistic Account

### 4.1 Data and Methods

This paper reports on the data collected from 10 speakers in two speech communities in central Poland—the city of Warsaw and the village Popowo Kościelne, located 20 miles northeast of Warsaw—evenly distributed by community and sex, age 26 to 61, who were administered sociolinguistic interviews of the type discussed in Labov (1984). Interviews were followed by the reading of a passage of text and a wordlist, both with a heavy concentration of 1<sup>st</sup> and 2<sup>nd</sup> person plural verb forms, with P/N markers present on a verb. Overall, 810 interview tokens of the relevant verb+P/N marking were recorded. Independent variables used in the analysis were verb length (in syllables), and a number of social factors (age, sex, and community type—urban vs. rural).

To complement the production data with preliminary evaluation data, a pilot online questionnaire was administered featuring a matched-guise experiment and a variety of grammaticality judgments (25 single sentences and 10 pairwise sentence comparisons in which informants were asked to choose the better form).<sup>4</sup> The questionnaire was completed by 92 informants, 75 of whom were educated urban speakers from Warsaw.

### 4.2 Results

Out of 810 tokens of past tense 1<sup>st</sup> and 2<sup>nd</sup> person plural past tense, in 6% of the cases (n=48), P/N marking appeared pre-verbally, thus confirming that P/N marking is subject to variation in these communities. However, this marking is virtually limited to two types of hosts: 26 of the 48 were cases of a phenomenon known as *Że*-support (cf. Franks and Bański 1999), where the host is a pleonastic *że* homophonous with the indicative complementizer, and 18 of the remaining 22 tokens were of a P/N marker attached to a subject pronoun. No gender or community-type effects were found with respect to P/N marking “mobility.” Finally, in the evaluation task where speakers were

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<sup>4</sup>The questionnaire (available only in Polish) can be found and taken at [www.ling.upenn.edu/~lukasza/polish/polishstart.php](http://www.ling.upenn.edu/~lukasza/polish/polishstart.php)

instructed to mark a grammatical structure as 1, and an ungrammatical one as 0, the average grammaticality index (mean of responses for a given structure) for all sentences with P/N marking appearing pre-verbally was 0.49. In other words, these structures were judged to be grammatical approximately half of the time, although the score differed depending on what constituent the marker attached to, with subject pronouns rated highest (0.76), followed by the pleonastic *że* (0.59), and object pronouns (0.51).

Only two tokens of VP coordination with one of the markers not present in the VP were found, and one of these tokens is an example featuring *Że*-support. The questionnaire included three VP coordination sentences (two of first person plural, one of first person singular), and they were judged to be as ungrammatical as the sentences with P/N marking appearing post-verbally, which is prohibited in Polish, suggesting at least that coordinated structures are too unreliable a phenomenon to warrant their use as a diagnostic in theoretical analyses of P/N marking.

With respect to stress variation on 1–2 person plural past tense forms of verbs with the marker appearing in its canonical position, there was a statistically significant gender effect ( $\chi^2$  5.24,  $p < 0.025$ ), with women using antepenultimate stress more than men (30% to 22%, interview style only). Type of community also turned out to have an effect on the stress variable: urban speakers use antepenultimate pronunciation at greater frequencies than village residents (over 30% to 21% in interview style,  $p < 0.01$ ), although it should be noted that both gender and community distributions are not equal. There are two men (one in each community) whose frequencies of antepenultimate stress forms top those of women, and two rural speakers (one man and one woman) whose pattern matches that of urban dwellers. In both cases the key to explaining this behavior is education—the two men are highly educated. Similarly, the two rural speakers whose frequencies of antepenultimate stress usage were on par with urban speakers were both well educated, one of them a young school teacher, native of the village but fresh out of Warsaw University.

While thorough multivariate analysis is needed to tease out real effects of various independent variables and to detect interaction between them with data from more speakers, the situation outlined above should be hardly surprising to anybody with some knowledge of Polish. Antepenultimate forms are described as prestigious and cultivated by virtually all linguists working on Polish morphology. It is thus expected that we would see women and urban speakers ahead on that front. This also suggests that the variable is operating above the level of consciousness, a hypothesis clearly confirmed by the patterns of style shifting observed in the data. Every speaker's frequency of antepenultimate stress increases regularly with each increase in

style formality, from interview style to reading passage to the wordlist. The rate of style shifting is greatest for speakers with the highest rates of antepenultimate in the interview style, that is to say, women more than men, and urban speakers more than countryside residents. In several cases the frequency goes up all the way to 100% in wordlist style.

Age effects for both variables are shown in Figure 4:

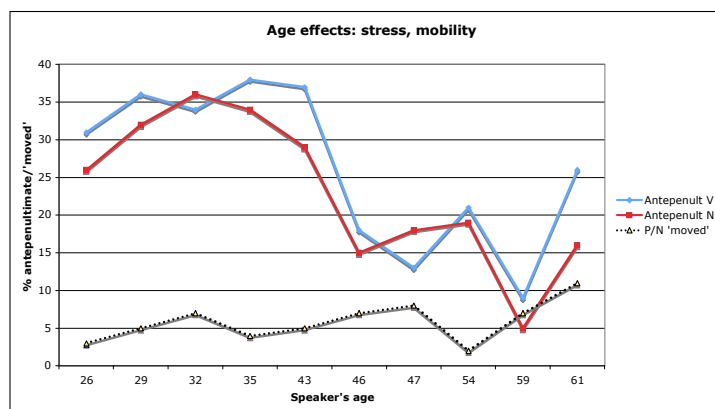


Figure 4. Age effects in the sample

Several age-related observations can be made readily. Most importantly, the results presented in Figure 4 confirm a long-standing claim in the literature (cf. Franks 1998) that mobility seems to be on the way out. What makes this process interesting, however, is not its general direction, but the fact that it is not yet completed, and while the frequencies seem residual for youngest speakers, they are not negligible. If one adheres to a lexicalist theory, Figure 4 is a piece of evidence that P/N markers are inflectional save for a limited number of exceptions, some of which—like *Že*-support—may actually turn out to be independently motivated.

With respect to antepenultimate stress, young speakers are clearly ahead of the rest. This may initially suggest that a change is in progress, or that age-grading is involved. However, these explanations fail to account for a high rate of antepenultimate usage by two speakers, aged 54 and 61. A closer look reveals that these speakers are well-educated urban dwellers, and I suspect that more refined multivariate analysis will shed more light on this. In any case, school teachers have been prescribing antepenultimate pronunciation of 1–2 plural past tense forms for decades, and the prospect of this highly learned and non-native pronunciation being real linguistic change in progress is unlikely. More probably, speakers have extended

antepenultimate pronunciation from a closed class of nouns borrowed from Greek and Latin (e.g. *matematyka*), an antepenultimate stress affectation not found elsewhere in the language, a strong possibility given the parallel slopes for these two variables in Figure 4.

### 4.3 Implications for the Theoretical Debate

The results presented above downplay the importance of coordination structures for diagnosing the current status of P/N marking in Polish. The crucial pieces of evidence remain mobility and interaction with stress. With respect to the former, while P/N markers become more and more immobile, this situation has persisted for decades and, given the spread of *Że*-support, it may well be there to stay. In any case, accounting for the mobility is not problematic for either Embick's analysis or Franks' dual approach. As far as antepenultimate stress is concerned, can it really be simply a register effect, as Embick suggests? The evidence presented above certainly does not disprove this view, and the fact that rates of antepenultimate stress on V+P/N constructions mirror those of Latin- and Greek-borrowed nouns does in fact constitute a solid argument for viewing antepenultimate stress in Polish as something of an affectation. Sociolinguistic analysis then helps us to identify in greater detail the interplay of social factors behind this form, and so far it points to antepenultimate stress being an adult-acquired form of urban and well-educated Polish speakers.

The larger point this discussion illustrates is the place of sociolinguistic evidence in the theory of grammar. Recent work on modeling morphosyntactic variation (e.g. Embick 2007) argues convincingly for keeping social factors out of syntactic theory, and the evidence adduced in this paper seems to indicate that while we do see antepenultimate forms in the data, they are motivated by external factors, which have long been known to operate independently of internal (linguistic) factors (Weinreich, Labov and Herzog 1968). It might be, as Embick's analysis predicts, that all forms come out of the derivation as having penultimate stress on the surface, but then external factors apply and antepenultimate stress results.

Sociolinguistic analysis is a valid method of testing these theoretical predictions, and with the support of formal analyses, it can contribute to our understanding of challenging problems in morphosyntactic theory.

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